

AGRICULTURE AND EMPLOYMENT

HUNGARIAN AGRICULTURE BEFORE AND AFTER THE TRANSITION¹

SCHLETT ANDRÁS² - BEKE JUDIT

Pázmány Péter Catholic University, Heller Farkas Institute of Economics
Budapest Business School, College of International Management and Business

The purpose of this paper is to review and analyse the Taylorist principles of labour organisation, a system that was adopted by the communist leadership and the ideologists of the soviet regime as well and that became the dominant practice in large scale farming in Hungary before the transition. The paper will focus on highlighting the factors that played a major role in determining the labour organisation of the industrialized agricultural holdings and will review the successes and failures of the development model together with the persistence of the principles in agricultural production after the transition.

Following the transition in 1990, as a result of the changes in organisational structure and ownership, a highly problematical model came into existence. The past two decades have witnessed dramatic changes in agriculture since a rise in economic inactivity in rural areas and a significant decrease in labour-intensive crop production coincide.

One of the more significant findings to emerge from this study is that in Hungary food industry plays a major role in providing stable rural employment and in ensuring food safety.

Keywords: agriculture, Taylorist labour organisation, rural employment,

Introduction

Western European agriculture underwent a number of significant changes during the 1950s. The green revolution technologies enabled an increase in productivity and the larger-scaled industrial agricultural systems became heavily dependent on external resources or inputs for materials. Industrial-style agriculture appeared: a closed system, human controlled space, processes based on functional relationships³, aimed at becoming independent and a sustained natural resources appropriation.

In Hungarian agriculture from the beginning of the 1960s a technical and technological revolution started that intended to syncretise the antagonism between economic rationality and political conformity⁴. Production organisation characteristic of the Western European system was introduced which fitted into the ideological perspective of communism.

In Hungary following the emergence of agricultural cooperatives, a gap between the traditional and the larger scaled systems for the organization of production appeared. By the 1970s, the Taylorist principles of labour and production organisation, a system that was adopted by the communist leadership and the ideologists of the soviet regime as well, became the dominant practice in large scale farming in Hungary. With the aim of modernising agriculture, the socialist agricultural policy intended to increase productivity and to introduce

¹This study was supported by TÁMOP-4.2.1B-11/2/KMR-2011-0002

²Researcher was supported by the Bolyai János Research Scholarship - Hungarian Academy of Sciences.

³KAPOSZ, Z.: *A magyarországi energiapolitika változásai a tervgazdasági rendszer időszakában (Changes in the energy policy during the planned economy in Hungary)*. In: Botos K. (szerk.): 1956: Fordulópont a gazdaságpolitikában. SZTE Gazdaságtudományi Kar. Szeged, Jate Press, 2007. p.120.

⁴Background to tackling problems during the Kádár regime, see: Varga Zs.: The impact of 1956 on the agricultural policy of the Kádár regime. In: Romsics, I. (Ed.): 1956 okai, jelentősége és következményei. Budapest, Magyar Történelmi Társulat, 2006. pp. 299-315.

modern technologies. However, in spite of the inevitable successes, crop yields, performance, economic efficiency and cost efficiency decreased.

Industrial scale production and increased discipline are inseparable. To ensure discipline, Taylorist techniques were applied, however, industrial scale agriculture offered full-time employment for far too many people that resulted in invisible unemployment. After the transition, unemployment became visible leading to severe economic and social tension in rural areas in Hungary. In the agricultural sector a considerably high number of people became constantly and inevitably inactive. Statistics clearly indicate that a significant growth in economic inactivity indicators and a steady decrease in the production of labour-intensive crops coincided. Private capital funded the production of less labour intensive crops, whereas vegetable and fruit production that provides more rural employment opportunities decreased dramatically.

Scientific Organisation of Labour under Socialism

The development of the principles and methods of scientific labour organisation began with F. W. Taylor (1856-1915). Taylor introduced the principles of scientific management and a special system of piece-rate pay. Taylor developed his functional system of labour organisation for the large-scale industry. He introduced the analysis of labour and time, set the principles of the division of labour, and devised the establishment of an efficient wage system.

Following World War I. the effect of industrial organisation and labour organisation on agriculture could already be felt. The conscious endeavour to appropriately adopt the knowledge about industrial organisation grew stronger. At the same time the first professionals and institutes of labour organisation appeared in agriculture, and agricultural work was studied employing scientific and practical methods.

The essence of Taylor's ideas is his concept about supervision. Even before Taylor it was widely assumed that the management has the right to "supervise" work. In practice, this right usually covered only the assignment of tasks with little direct indication on how the workers are supposed to perform the tasks. The hinge of all modern labour organisations is work supervision through the supervision of decisions made in the course of the work process. To achieve this, the first principle is that *"the managers undertake the collection of the traditional knowledge that workers possessed in the past, then they classify, organise them and finally measures, rules and regulations are established"*. The second principle: *"All possible brainwork must be kept off the workplace and must be focused at design and organisation departments"*. The third principle: *"The most conspicuous element of modern management is the principle of task. The management schedules each worker's job at least one day prior to commencement. In most cases, each person receives a full description of his responsibilities that outlines the tasks to be done, the equipment to be used and it includes the exact description of the methods and the timeframe. Preparation and implementation of the tasks is the most important element of scientific management"*⁵.

The result of the Taylorist principles applied in industrial practice and of the transformed labour organisation is well known: a rigid yet precise and efficient hierarchy came to existence.

The Taylorist labour organisation was far from being unknown to communist ideologists and leaders of the economy. Buharin himself, who was an influential bolshevik ideologist and chief organiser of the Soviet economy, was largely impressed by Taylorism. As

⁵Taylor, F. W.(2006): The Principles of Scientific Management. Cosimo, New York.36.

an ideologist of the New Economic Policy (NEP), he envisaged a huge country as an economy first cartelising then becoming a massive trust.⁶

Collectivisation ended by the spring of 1961. In 1961, 75 % of all arable land in the country belonged to the cooperatives and more than 95 % to the socialist sector. The number of cooperative members was 1 million 128 thousand people in the summer of 1961, which is eight times higher than it was in 1958.

At the same time, the migration of the agricultural community began. About 470 thousand active people left agriculture and moved to other sectors of the economy until 1965. Since the mechanization of agriculture did not precede, only followed the migration of labour, severe imbalances arose in many of the cooperatives in size and crop patterns on the one hand, and the availability of machine and manpower on the other hand.

After 1961, as a result of the high concentration, the number of co-operative farms decreased by 29 % by the end of 1966 compared to the 4507 figure in 1960, however, the average area size increased from 1512 kh to 2644 kh.

During the collectivisation process arable land areas in Hungary were turned into large plots suitable for large scale production. The traditional farm size changed, and concentration resulted not only in an increase in the size of the farms but the technology applied changed as well. This process paved the way for the industrialization of agriculture. In the emerging large-scale agriculture the traditional experience could not provide sufficient guidelines for labour organisation. The solution was thought to be the utilization of agricultural analogies of industry. To be able to solve the organizational problems of large-scale industrial farms a detailed analysis, measurement and study of the work processes and labour input, and the analysis of the causes of labour time losses was needed. Labour standards and performance criteria were designed to establish the new appropriate labour organisations.

After World War II, in the communist regime, the governing authorities aimed at the formation of the socialist type large-scale economy. They considered state farms and cooperatives as the two basic forms of large-scale production. State farms were involved in experimenting, innovations and introducing new methods into practice.

Before the 1970s, the Taylorist labour organisation was the dominant system in large scale farming in Hungary. Under socialism, the agricultural policy intended to increase productivity and to introduce modern technologies in order to modernise agriculture which resulted in such a paradoxical situation where a socialist production organisation system adopted modern production technologies. As it was mentioned earlier, the principles of Taylorism were quickly picked up by the Soviet industrial practice in the 1910s and by the Eastern European practice in the 1950s, and later on the socialist reorganisation of agriculture in the 1960s witnessed a “knowledge import”. The new system of the Taylorist labour organisation was picked up which consisted of a highly trained corporate elite, a middle management that executes decisions, rate-fixers, supervisors and semi-skilled workers.⁷ Professionals who had a university degree and who were experts in modern sciences were in demand in agriculture. These experts studied Taylorism at universities, and they considered Taylorism the most efficient labour organisation model. Labour organization was monopolized by the highly educated management, and lower level management was forced to execute the orders. A great number of semi-skilled and unskilled workers were employed to facilitate mass production.⁸

⁶HULÉNYI M. (ed.): *A mezőgazdasági munkaszervezés korszerű elméleti alapjainak kialakulása.* (The development of the labour organisation principles in agriculture) Bp., AKI, 1975. 20-21.

⁷KUCZI T.: *Taylorizmus a mezőgazdaságban?* (Taylorism in agriculture?) In *JUHÁSZ Pál: Emberek és intézmények. Két százatca az agráriumban.* Budapest, UMK-Jelenkutató Alapítvány, 2006. pp. 14-15.

⁸SCHLETT, A.: *Changes in the Agrarian Policy: The role of production systems in the evolution of the Hungarian Agriculture.* In: József Káposzta (ed.) *New Elements and Research in Spatial Economy.* Research Institute of J. Selye University Komárno, 2009. pp. 121-130.

Agriculture managed to accomplish incredible technological progress that conflicted with the lower quality standards within the centralized management. This tendency was further strengthened by the fact that centralized decision making and execution were separated and also by the fact that there was a distance between central decision-making and the execution process increasing the possibility for distortion during the execution.⁹

As agricultural production became more industrialized, the strict connection between the particular agricultural sectors and the territory became loose. The most important task of the area managers was to control the farming operations. From the early seventies, the synchronous combination of the territorial and the sectorial organizational principles can be observed in the agricultural business organizations.¹⁰

Regarding the yields of grains industrial farms applying the Taylorist model and the leading producers of the world showed similar results but the former one's productivity was lower. Grains are not labour intensive to produce, therefore even the largest farms can engage only a few employees.¹¹ Unlike in family farms in the US, in Hungary agricultural cooperatives and state farms engaged a lot of employees, and as a results of changing the system of labour organisation and implementing the Taylorist principles into industrial practice a rigid yet productive hierarchical labour organisations with 4 or 5 management levels came into existence.¹²

Discipline was one of the most important elements of organised labour: employees had to conform to the exact time, duration and method of labour. It is relatively less expensive to control simple, standardized tasks¹³. Farm machinery however is used in the field, out of the sight of the supervisors, so farm workers became responsible for ten times more expensive modern machinery, and therefore the personal element had a decisive role in amortization and attrition. The life span of machinery depended largely on whether the operator or the owner was responsible for maintenance and replacement.¹⁴

Accelerated amortization was not a problem in itself but its consequences were equally or even more important: because of the optimal use of time tractor operators were unavailable when they were most needed. Machinery was much needed since in plant production in order to increase yields, the optimal use of time became shorter. However, in large scaled agriculture, the increased cost was the result of the large number of people employed.

During the production of labour intensive smart goods that require proficiency, savvy and considerable discretion to produce, controlling the tasks can be expensive. In agriculture labour intensive tasks are seasonal, moreover, expertise was prodigalized in the Taylorist hierarchy since employees were forced only to fulfil orders from the superiors without using their talent. Changes in labour organisation, the division of labour and increased specialization resulted in a lower task autonomy and employee participation. As a consequence of such industrial production systems, a conflict between technological discipline and employees' engagement emerged.

An important lesson is that the possibilities of increased control and of forcing improved performance in agriculture are not the same as in industry. In agriculture, controlling tasks are less efficient and more expensive. Introducing Taylorist labour

⁹TÓSZEGI, Z.: *A vállalati belső mechanizmus korszerűsítése az állami gazdaságokban (Modernising inner mechanisms in state farms)*. In *Gazdálkodás*, (1984) XXVIII.évf. 12. sz. p. 2.

¹⁰TÓTH, E.: *A mezőgazdaság iváallatok belső érdekeltségi rendszerének jellemzői és a fejlesztés irányai*. In *Gazdálkodás*, (XXX. évf.) 1986/3.sz. p. 60.

¹¹VARGA, ZS.: *Between East and West*. In: *Cultic revelations - studies in modern historical cult personalities and phenomena*. Jyväskylä, University of Jyväskylä, 2010. pp. 165-173.

¹²KUCZI, T.: *Taylorizmus a mezőgazdaságban?* In JUHÁSZ Pál: *Emberek és intézmények. Két zsákutca az agráriumban*. Budapest, UMK-JelenkutatóAlapítvány, 2006. p. 17.

¹³HAJÓS, L. - KOZÁRI, J. - MÉHI, J. - UDVARI L.: *Mezőgazdasági munkaszervezés (Labour organization in agriculture)*. Agrártudományi Egyetem, Gödöllő, 1989.

¹⁴KOPÁTSY, S. (1989): *Húsz év után (After twenty years)*. Budapest, Pénzügykutató Rt. p. 107.

organisation in agriculture lead to a crisis but the impacts were smaller since market gardens and small scale production provided some extra predictable income for the employees after the 1970s. Although incomes were low in agriculture, the predictable income could attract people to rural areas.

Following the transition ...

After the transition, as a result of the changes in organisational structure and ownership, a highly problematical agrarian model came into existence.

The European model is based on small and medium sized family farms and cooperatives. The average farm size in the EU is about 25 hectares. In France for instance, large farms have an area of over 274 hectare. Most recent Eurostat data show that in some developed and competitive European countries the average farm size is the following: 6 ha in Poland, 8 ha in Italy, 17 ha in Switzerland, 19 ha in Austria, 25 ha in the Netherlands, 29 ha in Belgium, 46 ha in Germany and 60 ha in Denmark.¹⁵

Another less frequently cited but interesting data is the size of the large farms. Eurostat counts the size of all the utilised agricultural area (UAA), starting from the largest farms (such as the farm of Csányi Sándor in Hungary) moving to the smaller ones, and where the total amount exceeds 20% of the country's total agricultural area the farm is considered to be „large”. The average size of these large farms is 54 ha in Switzerland, 135 ha in the Netherlands, 150 ha in Belgium, 250 ha in Poland, 274 ha in France, 295 ha in Austria, 337 ha in Italy and 426 ha in Denmark. In Germany, in spite of the so called „DDR-effekt” the average size of the large farms is only 1.396 hectare, whereas in Hungary it is 3.164 hectare. Even bigger large farms can be found only in the Czech Republic(3.531 ha) and in Slovakia (3.934 ha).

Twenty years after the transition, 8% of all farms own 90% of all arable land, whereas the average size of the large farms is over 3000 hectare.

Unlike in the South American model, the European farm structure can be competitive because instead of increasing the farm size or of creating „bunches” that are dependent on large integrators it unites smaller pieces of the mosaic. The cooperative societies that are engaged in retail, processing, storage, procurement, marketing or providing loans are highly competitive. In such a bottom up approach profits are generated and secured for the members of the vertical coordination where all the interdependent production and distribution activities are harmonised. However, the large top down integrators secure profit for themselves by receiving the profit generated in the „bunches” that are integrated by them. Moreover, unlike in the large scale industrial model in South America, the cooperatives have significantly better indicators, they are more viable, their rural development, environmental, regional, social and employment indicators are better, and the costs that have to be financed by the society are much lower.

Land ownership problems in Hungary were deepened as a result of the post-communist land reform process that was based on the compensation of former land owners, and the privatisation of land and food industry. After the transition the chance to strengthen cooperation in Hungarian agriculture was low, besides, private capital funded the less labour intensive arable farming. (Fodder corn export alone hit 1 billion dollar in 2008.) The production of labour intensive crops suitable for individual farming such as fruits and vegetables is less common in Hungary, and the extent of foreign involvement in the Hungarian food industry has been considerable since the 1990s.

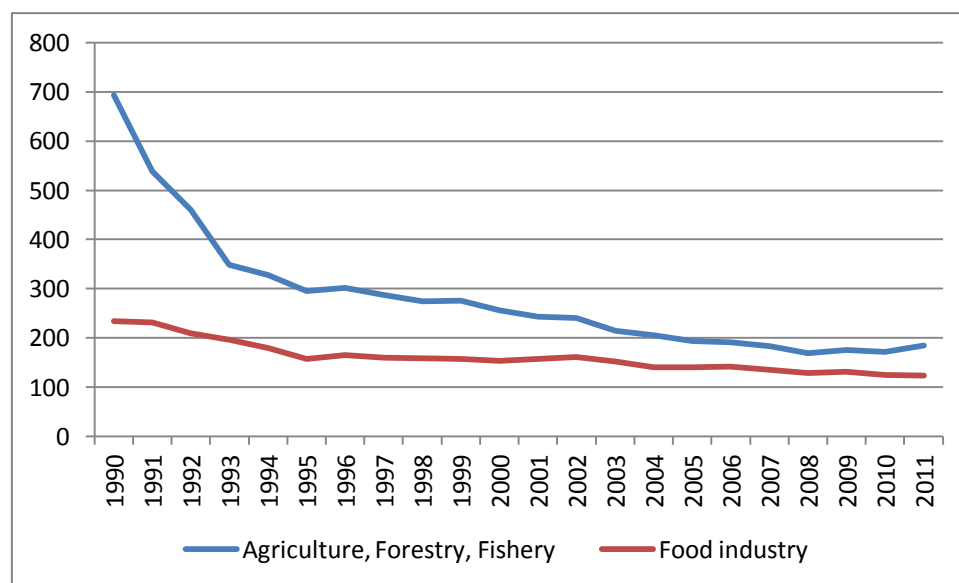
¹⁵ Martins, C. – Tosstorff, G. (2011): Largefarms in Europe, EUROSTAT, Statistics in Focus, 18/2011., Agriculture and fisheries, Luxembourg, 8 p.

Foreign investors often buy production capacity in Hungary with the aim of gaining more market share, then these processing plants are excluded from production to eliminate direct competition. In certain industries high levels of concentration contribute to economies of scale. Monopolist or oligopolistic market structures cannot exist in sectors requiring high level of investment (e.g. cooking oil, beverages, sugar, meat production or in confectionery industry). Food safety, environmental and quality regulations led to a significant increase in profitable size.

Since food trade operates with fewer, larger purchasing associations, companies have to ensure a bulk year-round supply of uniform produce. Food wholesale in Hungary declined after the 1990s. Food processing companies went into direct selling, and purchasing associations started to sell own brand products to a large extent. Wholesalers need to be equipped with updated information on the market in order to gain profit. While processing companies used to have sufficient information about the markets and the retailers' role was to distribute the products, nowadays retailers have dominance over producers. The information asymmetry between retailers and suppliers makes supply chain operations more effective: supply chains has the private information about the demand since by using barcodes they are able to store large amounts of data about consumer behaviour or the circulation of the products¹⁶. The information asymmetry enables retailers to have information about the discounts offered by competing suppliers thus influencing the market.

After the transition, employment in agriculture decreased significantly as can be seen in Figure 1.

Figure1: Employment trends in Hungarian agriculture (thousand people), 1990-2011



Source: KSH, (Hungarian Central Statistical Office), Employment.

¹⁶HAJÓS, L.- PAKURÁR, M.- BERDE, CS.: *Szervezés és logisztika* (organisation and logistics). 2007. http://miau.gau.hu/avir/intranet/debrecen_hallgatoi/tananyagok/jegyzet/28-Szervezes_es_logisztika.pdf

Table 1. Employment in Hungary (1990-2011) thousand people

Year	Economy total	Agriculture, forestry, fishery	Food industry
1990	4 880	693	234
1991	4 520	538	231
1992	4 083	460	210
1993	3 827	349	197
1994	3 752	328	180
1995	3 679	295	157
1996	3 648	302	165
1997	3 646	288	160
1998	3 696	275	159
1999	3 809	276	157
2000	3 856	256	154
2001	3 868	243	158
2002	3 871	241	161
2003	3 922	215	152
2004	3 900	205	141
2005	3 902	194	140
2006	3 930	191	142
2007	3 926	183	135
2008	3 879	169	129
2009	3 782	176	132
2010	3 781	172	125
2011	3 812	185	124

Source: KSH (Hungarian Central Statistical Office)

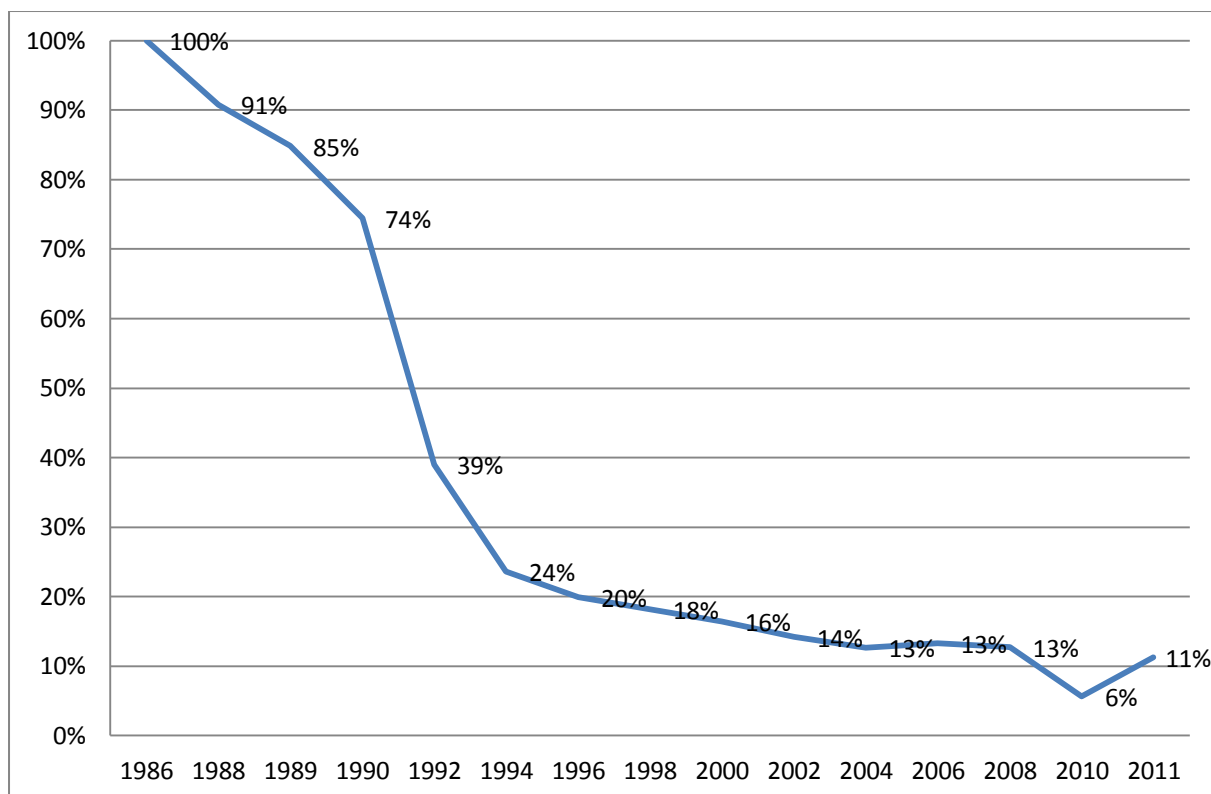
Before the transition state farms and agricultural cooperatives offered employment to 90% of the people engaged in farming, and other activities like book keeping or maintenance, etc.¹⁷ Invisible unemployment characterising the Socialist large scale agriculture became visible and during the first 10 years following the transition employment rate dropped by over 60%. Instead of migrating to more productive sectors, labour force moved to long-term inactivity since private capital funded the production of the less labour intensive crops while vegetable and fruit production that provides more rural employment opportunities decreased dramatically.

The main reason for these changes was the lack of physical infrastructure (storing capacity, cold-chain storage, sorting, grading, packing, quality control or processing), and the lack of commercial-financial infrastructure (engrossers, creditors).¹⁸ In the traditional agricultural areas in Hungary (Szabolcs-Szatmár-Bereg, Békés, Hajdú-Bihar, Jász-Nagykun-Szolnok, Csongrád, Bács-Kiskun counties) long term crisis increased to a point where social problems and unemployment became serious issues. The number of employed people in agriculture in all the regions and counties of Hungary decreased dramatically after the transition, as can be seen in Figure 2.

¹⁷ GULYÁS, L.: *A Magyar gazdaság története a rendszerváltástól napjainkig* (The history of Hungarian economy from the transition until the present days). In: Gulyás L. (szerk.): Széchenyitől a Széchenyi Tervig. Szeged, Jate Press, 2009. pp. 178-179.

¹⁸TÖRÖK, A.: *Zöltség és államrezon*. Kommentár, 2011/2. pp. 79-81.

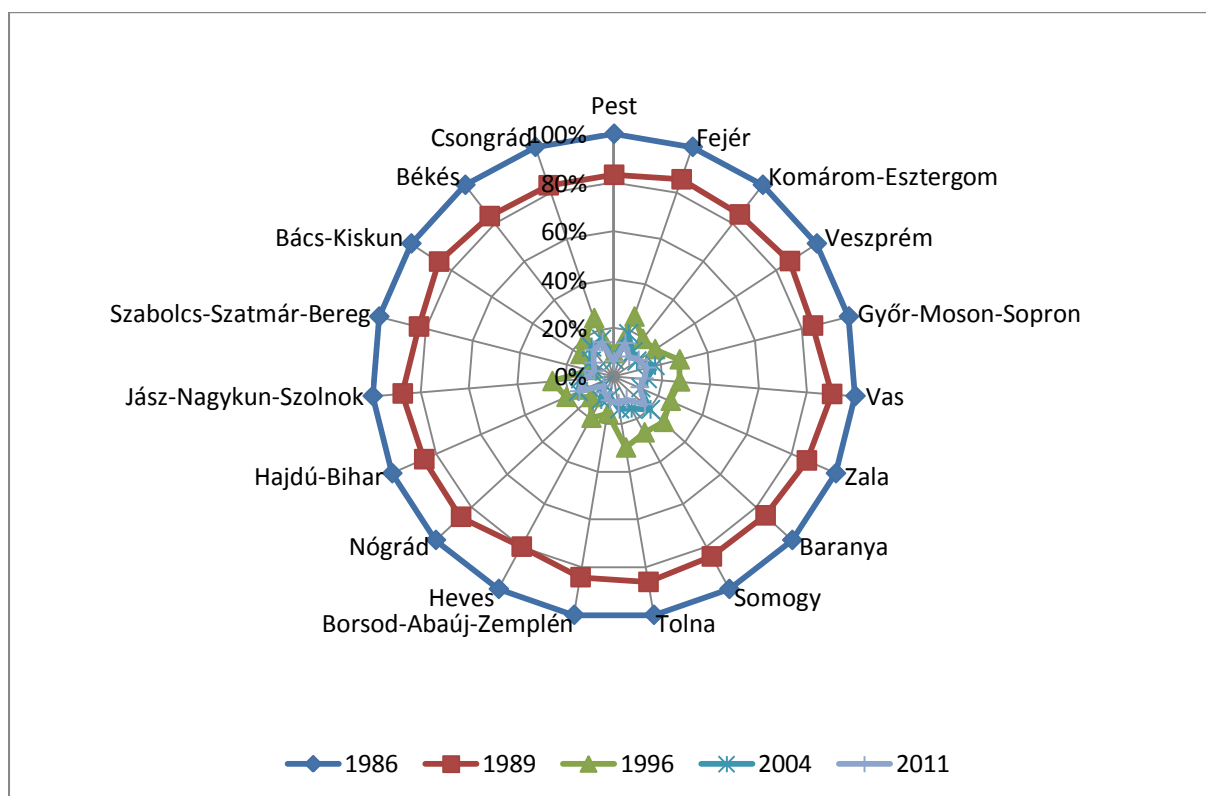
Figure 2: Employment in agriculture, forestry and fishery in Hungary between 1986-2011
1986=100%



Source: KSH (Hungarian Central Statistical Office)(1986-2012)

Figure 3 depicts that before the change in the regime in 1989 employment in agriculture was significant, however by the late 1990s employment dropped dramatically in all the counties in Hungary. In 1996 the most dramatic decline can be seen in Nógrád, Szabolcs-Szatmár-Bereg or Hajdú-Bihar county, whereas in 2011 employment is the lowest in Nógrád, Heves and Komárom-Esztergom county.

Figure 3. Employment in the counties of Hungary 1986 = 100% – Agriculture, forestry, fishery



Source: KSH (Hungarian Central Statistical Office)(1986-2012)

As a result, arable crop export remained a considerable source of foreign currency, however, the money earned in this way is spent on social welfare payment to the population who used to work in agriculture, on welfare subsidies, and on purchasing food that was produced abroad. The national economy is adversely affected by the fact that basic foodstuffs have to be imported which, via the outflow of money, weakens balance-of-payments positions¹⁹. Eventually, the Hungarian social welfare system provides support to producers in Denmark, Slovakia or Germany.

Conclusion

The assessment of the sector's performance depends on employment and social policy as well as on subsidy and area development policy. The Taylorist labour organisation and management systems were unsuccessful during the Socialism in Hungary as a result of the inadequate controlling. Before the transition, forced over-employment characterised food industry, and even after the transition period unemployment and inactivity have become common features of rural population. Decreasing social transfers further worsen the situation.

The significant decrease in the labour intensive sectors has a negative impact on rural employment. Fruit and vegetable production declined by about 50% after the transition (Table 1 and 2).

¹⁹ LENTNER, CS.: *A Magyar élelmiszer-vertikum újjászervezésének stratégiai kérdései* (Strategic issues in Hungarian vertical integration). Polgári Szemle, 2010/ápr. 6. évf./2. sz.

Table 2. Fruit production (thousand tons) 1989–2009

Year	Apple	Pear	Cherry	Plum	Raspberry
1989	959	90	31	179	25
2009	575	32	8	51	5

Source: Csendes, 2013

Table 3. Vegetable production in Hungary (thousand tons) 1989–2009

Year	Cabbage	Onion	Tomato	Green peas	Red pepper	Potato
1989	84	170	306	132	47	819
2009	76	61	193	99	20	560

Source: Csendes, 2013

The continuous decline in the labour intensive sectors resulted in a significant drop in agricultural employment and in the dramatic decrease in unemployment (Table 4).

Table 4. Active population and the number of people employed in agriculture (1989-2010)

Year	Number of employed people in whole economy (thousand people)	Number of employed people (thousand people)	Number of unemployed people (thousand people)
1989	4760	837	23
1992	4028	460	660
2001	3868	240	345
2010	3788	172	445

Source: Csendes, 2013

The system of agricultural subsidies also hinders horticulture and fruit production. The support system is area based, therefore supports arable crop production more than horticulture and fruit production that requires significantly more labour intensive methods.

Trade liberalization in fruit and vegetable production resulted in the loss of domestic markets, and the shrinking markets have to face foreign competition as well. Sweet corn production is an exception, its success is due to private foreign capital funding, but producers are unwilling to cooperate.

As for the future, to increase the performance of agriculture it is vital to increase the supports provided to local producers, to further increase the activity of single-purpose and multi-purpose regional organizations, and to promote labour intensive production systems in farming. In finding the solutions to troubling social problems cooperation, which could be organised by local government bodies and local producers, should play a decisive role.

A significant growth in the quality of rural employment would be of strategic importance. By supporting the local production of food, by expanding the activity of local government bodies and by supporting labour intensive activities like growing fruit and vegetables, a high and stable level of employment as a key government objective could be achieved and the performance of agriculture could also be improved.

REFERENCES

1. CSENDES Cs.: Midasz király birodalma: Magyarország. (The realm of King Midas, Hungary). Polgári Szemle, 2013május – 9. évfolyam 1-3. szám
http://www.polgariszemle.hu/app/interface.php?view=v_article&ID=446&page=1
2. GULYÁS L.: *A Magyar gazdaság története a rendszerváltástól napjainkig* (The history of Hungarian economy from the transition until the present days). In: Gulyás L. (szerk.): Széchenyi-től a Széchenyi Tervig. Szeged, Jate Press, 2009. pp. 178-179.
3. HAJÓS L. - KOZÁRI J. - MÉHI J. - UDVARI L.: *Mezőgazdasági munkaszervezés* (Labour organization in agriculture). Agrártudományi Egyetem, Gödöllő, 1989.
4. HAJÓS L.- PAKURÁR M.-BERDE CS.: *Szervezés és logisztika* (organisation and logistics). 2007.
http://miau.gau.hu/avir/intranet/debrecen_hallgatoi/tananyagok/jegyzet/28-Szervezes_es_logisztika.pdf
5. KAPOSZTÁS Z.: *A magyarországi energiapolitika változásai a tervgazdasági rendszer időszakában* (Changes in the energy policy during the planned economy in Hungary). In: Botos K. (szerk.): 1956: Fordulópont a gazdaságpolitikában. SZTE Gazdaságtudományi Kar. Szeged, JatePress, 2007. p. 120.
6. KOPÁTSY S. (1989): *Húsz év után* (After twenty years). Budapest, Pénzügykutató Rt. p. 107.
7. KUCZI T.: *Taylorizmus a mezőgazdaságban?* (Taylorism in agriculture?) In JUHÁSZ Pál: *Emberek és intézmények. Két zsákutca az agráriumban*. Budapest, UMK-Jelenkutató Alapítvány, 2006. pp. 14-15.
8. KUCZI T.: *Taylorizmus a mezőgazdaságban?* In JUHÁSZ Pál: *Emberek és intézmények. Két zsákutca az agráriumban*. Budapest, UMK-Jelenkutató Alapítvány, 2006. p. 17.
9. KSH (Hungarian Central Statistical Office) Területi Statisztikai Évkönyvek (Regional Statistical Yearbooks 1996-2012). KSH Budapest.
10. KSH: A foglalkoztatottak száma.
http://www.ksh.hu/docs/hun/agrar/html/tabl1_1_2.html (2013. október 28).
11. LENTNER CS.: *A Magyar élelmiszer-vertikum újjászervezésének stratégiai kérdései* (Strategic issues in Hungarian vertical integration). PolgáriSzemle, 2010/ápr. 6. évf./2. sz.
12. MARTINS, C. – TOSSTORFF, G. (2011): Large farms in Europe, EUROSTAT, Statistics in Focus, 18/2011., Agriculture and fisheries, Luxembourg, 8 p.
13. SCHLETT A.: *Changes in the Agrarian Policy: The role of production systems in the evolution of the Hungarian Agriculture*. In: József Káposzta (ed.) New Elements and Research in Spatial Economy. Research Institute of J. Selye University Komárno, 2009. pp. 121-130.
14. TAYLOR, F. W. (2006): *The Principles of Scientific Management*. Cosimo, New York.
15. TÓSZEGI Z.: *A vállalati belső mechanizmus korszerűsítése az állami gazdaságokban* (Modernising inner mechanisms in state farms). In *Gazdálkodás*, (1984) XXVIII. évf. 12. sz. p. 2.
16. TÓTH E.: *A mezőgazdasági vállalatok belső érdekeltégi rendszerének jellemzői és a fejlesztés irányai*. In *Gazdálkodás*, (XXX. évf.) 1986/3. sz. p. 60.
17. VARGA ZS.: *Between East and West*. In: *Cultic revelations - studies in modern historical cult personalities and phenomena*. Jyväskylä, University of Jyväskylä, 2010. pp. 165-173.